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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,337	11/28/2001	Pary Baluswamy	4307.1US (99-1193.1)	6253

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EXAMINER
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PIZARRO CRESPO, MARCOS D

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 11/06/2002

6

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicati n No.

09/996,337

Applicant(s)

BALUSWAMY ET AL.

Examiner

Marcos D. Pizarro-Crespo

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Attorney's Docket Number: 4307.1US (99-1193.1)

Filing Date: 11/28/2001

Claimed Priority Date: 8/30/2000 (Divisional 09/651,790)

Applicant(s): Baluswamy et al.

Examiner: Marcos D. Pizarro-Crespo

### **DETAILED ACTION**

This Office action responds to the amendment (paper no. 5) filed on 9/23/2002.

#### ***Acknowledgment***

1. The amendment (paper no. 5) filed on 9/23/2002 in response to the Office action (paper no. 3) mailed on 6/20/2002 has been entered. The present Office action (paper no. 6) is made with all the suggested amendments being fully considered. Accordingly, pending in this Office action are claims 1-15.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Lines 2-3 in claim 7 recite the limitation "said bottom surface of said overlay target". There is insufficient antecedent basis for this limitation in the claim.

***Claim R jections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-9 and 11-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinoshita (JP 58-90728).

7. Kinoshita shows (see, e.g., figs. 1 and 2) all aspects of the instant invention including an overlay target comprising at least one trench 4 having a bottom surface, said trench including a series of substantially vertically extending raised lines originating at said bottom surface of said trench.

8. Regarding claims 2 and 4, Kinoshita shows at least one continuous trench 4 defining a geometric shape (see, e.g., fig. 1).

9. Regarding claim 3, Kinoshita shows (see, e.g., figs. 1 and 2) the overlay target further comprising a plurality of trenches (4, 5) defining the overlay target, each trench including a series of substantially vertically extending raised lines originating at its bottom surface.

10. Regarding claim 5, Kinoshita shows (see, e.g., figs. 4 and 5) an overlay target comprising a pad area having a bottom surface, said pad area including a series of vertically extending raised lines originating at the bottom surface of the pad area.

11. Regarding claim 6, Kinoshita shows (see, e.g., figs. 4 and 5) the pad area comprising a plurality of pad areas (41, 42, 43) defining the overlay target, each pad

area including a series of substantially vertically extending raised lines originating at its bottom surface.

12. Regarding claim 7, Kinoshita shows (see, e.g., figs. 4 and 5) the overlay target further comprising a trench **44** including a series of substantially vertically extending raised lines originating at the bottom of the trench.

13. Regarding claim 8, Kinoshita shows (see, e.g., figs. 1, 2, 4 and 5) a semiconductor wafer comprising a semiconductor substrate **1** and an overlay target having a bottom surface, said overlay target comprising at least one series of substantially vertically extending raised lines originating at the bottom surface of the overlay target.

14. Regarding claim 9, Kinoshita shows that the series of substantially vertically extending raised lines may be etched into the semiconductor substrate **1** (see, e.g., figs. 2 and 5; pp.3/col.1/ll.5-12).

15. Regarding claim 11, Kinoshita shows the series of substantially vertically extending raised lines disposed in at least one trench **4** (see, e.g., figs. 1 and 2).

16. Regarding claim 12, Kinoshita shows a plurality of trenches (**4, 5**) with a corresponding plurality of substantially vertically extending series of raised lines defining the overlay target, wherein each of the trenches includes one of the plurality of substantially vertically extending series of raised lines (see, e.g., figs. 1 and 2).

17. Regarding claim 13, Kinoshita shows the series of raised lines disposed in a pad area **43** (see, e.g., fig. 5).

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18. Regarding claim 14, Kinoshita shows a plurality of pad areas (**41, 42, 43**) with a corresponding plurality of substantially vertically extending series of raised lines defining the overlay target, wherein each of the pad areas includes one of the plurality of substantially vertically extending series of raised lines (see, e.g., figs. 4 and 5).

19. Regarding claim 15, Kinoshita shows the series of substantially vertically extending raised lines comprising a first series of raised lines disposed in a pad area **43** and a second series of raised lines disposed in a trench **44** (see, e.g., fig. 5).

20. Claims 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Deguchi (JP 62-18714).

21. Deguchi shows (see, e.g., fig. 2) all aspects of the instant invention including a semiconductor wafer comprising a semiconductor substrate **10** and an overlay target **28** having a bottom surface, said overlay target comprising at least one series of substantially vertically extending raised lines originating at the bottom surface of the overlay target **28**.

22. Regarding claim 10, Deguchi shows that the at least one series of substantially vertically extending raised lines may be etched into a material layer **27** overlying the semiconductor substrate **10** (abstract).

### ***Response to Arguments***

23. The applicants argue:

Kinoshita (JP 58-90728) fails to disclose any one of a trench, a pad area, and an overlay target, including at least a series of substantially vertically extending raised lines originating from its bottom surface. Rather, Kinoshita discloses regions having a plurality of fine indentations having an arc-shaped cross-sectional area. Clearly, the minute cavities disclosed in Kinoshita do not include substantially vertically extending raised lines.

The examiner argue:

The fact that Kinoshita shows fine indentations having an arc-shaped cross-sectional area does not oppose the fact that he also shows a trench including a series of substantially vertically extending raised lines originating at the bottom surface of the trench. See, for example, figure 2, where Kinoshita clearly shows a series of upright raised lines that extend vertically from the bottom of a trench **4**.

24. The applicants argue:

Deguchi (JP 62-18714) does not disclose an overlay target including at least one series of substantially vertically extending raised lines originating at the bottom surface of an overlay target. Rather, Deguchi shows rod-like projections etched through the entire depth of a Mo film formed on a substrate.

The examiner argues:

The fact that Deguchi shows rod-like projections etched in a Mo film formed on a substrate does not oppose the fact that he also shows an overlay target including at least one series of substantially vertically-extending raised lines originating at the bottom surface of a trench. See, for example, figure 2c, where Deguchi clearly shows an overlay target **28** including a series of vertically-extending raised lines originating at the bottom surface of the overlay target.

### ***Conclusion***

25. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

26. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

27. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be faxed to Art Unit 2814 via the Art Unit 2814 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 308-7722** or **-7724**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Marcos D. Pizarro-Crespo** at **(703) 308-6558** and between the hours of 9:00 AM to 7:30 PM (Eastern Standard Time) Monday through Thursday or by e-mail via [Marcos.Pizarro@uspto.gov](mailto:Marcos.Pizarro@uspto.gov). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on (703) 306-2794.

29. Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at **(703) 308-0956**.



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30. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 257/797; 438/401,462,975	10/21/2002
Other Documentation:	
Electronic Database(s): EAST (USPAT, EPO, JPO)	10/21/2002



LONG PHAM  
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